EXHIBIT 300   **CAPITAL ASSET PLAN AND BUSINESS CASE SUMMARY**

Exhibit 300: Capital Asset Plan and Business Case Summary
Part I: Summary Information And Justification (All Capital Assets)

Section A: Overview (All Capital Assets)

1. **Date of Submission:** 2010-03-19 19:03:18

2. **Agency:** 006

3. **Bureau:** 48

4. **Name of this Investment:** NOAA/OCIO/ NOAA R&D High Performance Computing System

5. **Unique Project (Investment) Identifier:** 006-48-01-17-01-3804-00

6. **What kind of investment will this be in FY 2011?:** Mixed Life Cycle
   - Planning
   - Full Acquisition
   - Operations and Maintenance
   - Mixed Life Cycle
   - Multi-Agency Collaboration

7. **What was the first budget year this investment was submitted to OMB?** *

8. **Provide a brief summary and justification for this investment, including a brief description of how this closes in part or in whole an identified agency performance gap; this description may include links to relevant information which should include relevant GAO reports, and links to relevant findings of independent audits.**

 This investment provides the computational resources necessary to support continued advances in the environmental modeling capabilities and addresses other HPC requirements that may arise within NOAA and at other partner agencies. IT capital investment includes the HPC systems, complementary storage devices and interconnects, communications hardware interfaces, software, networking equipment, system maintenance, support services, IT security, and necessary infrastructure enhancements. This Exhibit represents a coordinated and centralized capital planning effort for the three NOAA HPC organizations, and is intended to improve the acquisition process and to achieve economies of scale through consolidation of system requirements and a reduced number of individual acquisitions. NOAA's R&D HPCS resources enable scientists to attack long-lead-time problems associated with the physical processes that govern the behavior of the atmosphere and the ocean. Advanced climate models are the only means for distinguishing between natural and forced climate variations, assessing future impacts, and hence providing a capability to adapt to climate change and to explore mitigation strategies. These models are crucial for understanding some of the most critical climate issues of today. Major economic decisions of national importance are being made on issues impacted by climate without being based on the best possible science. These resources will also be utilized for a number of shorter-range meteorological research projects, including the development of next generation weather and climate forecast models, National Test Bed, and Satellite Data Assimilation projects. They will also facilitate applied meteorological research and development for purposes of improving and creating short-term warning and weather forecast systems, models, and observing technology.

   a. **Provide here the date of any approved rebaselining within the past year, the date for the most recent (or planned)alternatives analysis for this investment, and whether this investment has a risk management plan and risk register.**

9. **Did the Agency's Executive/Investment Committee approve this request?** *
   a. **If "yes," what was the date of this approval?** *

10. **Contact information of Program/Project Manager?**

EXHIBIT 300   **CAPITAL ASSET PLAN AND BUSINESS CASE SUMMARY**

- **Name:** *
- **Phone Number:** *
- **Email:** *

11. What project management qualifications does the Project Manager have? (per FAC-P/PM)? *
- Project manager has been validated according to FAC-PMPM or DAWIA criteria as qualified for this investment.
- Project manager qualifications according to FAC-P/PM or DAWIA criteria is under review for this investment.
- Project manager assigned to investment, but does not meet requirements according to FAC-P/OM or DAWIA criteria.
- Project manager assigned but qualification status review has not yet started.
- No project manager has yet been assigned to this investment.

12. If this investment is a financial management system, then please fill out the following as reported in the most recent financial systems inventory (FMSI):

Financial management system name(s)	System acronym	Unique Project Identifier (UPI) number
*	*	*

a. **If this investment is a financial management system AND the investment is part of the core financial system then select the primary FFMIA compliance area that this investment addresses (choose only one):** *
- computer system security requirement;
- internal control system requirement;
- core financial system requirement according to FSIO standards;
- Federal accounting standard;
- U.S. Government Standard General Ledger at the Transaction Level;
- this is a core financial system, but does not address a FFMIA compliance area;
- Not a core financial system; does not need to comply with FFMIA

EXHIBIT 300   **CAPITAL ASSET PLAN AND BUSINESS CASE SUMMARY**

Section B: Summary of Funding (Budget Authority for Capital Assets)

1.

Table 1: SUMMARY OF FUNDING FOR PROJECT PHASES (REPORTED IN MILLIONS) (Estimates for BY+1 and beyond are for planning purposes only and do not represent budget decisions)								
	PY1 and earlier	PY 2009	CY 2010	BY 2011	BY+1 2012	BY+2 2013	BY+3 2014	BY+4 and beyond	Total
Planning:	*	*	*	*	*	*	*	*	*
Acquisition:	*	*	*	*	*	*	*	*	*
Subtotal Planning & Acquisition:	*	*	*	*	*	*	*	*	*
Operations & Maintenance:	*	*	*	*	*	*	*	*	*
Disposition Costs (optional):	*	*	*	*	*	*	*	*	*
SUBTOTAL:	*	*	*	*	*	*	*	*	*
Government FTE Costs should not be included in the amounts provided above.								
Government FTE Costs	*	*	*	*	*	*	*	*	*
Number of FTE represented by Costs:	*	*	*	*	*	*	*	*	*
TOTAL(including FTE costs)	*	*	*	*	*	*	*	*	*

2. If the summary of funding has changed from the FY 2010 President's Budget request, briefly explain those changes:
*

EXHIBIT 300   **CAPITAL ASSET PLAN AND BUSINESS CASE SUMMARY**

Section C: Acquisition/Contract Strategy (All Capital Assets)

1.

Table 1: Contracts/Task Orders Table											
Contract or Task Order Number	**Type of Contract/Task Order (In accordance with FAR Part 16)**	**Has the contract been awarded (Y/N)**	**If so what is the date of the award? If not, what is the planned award date?**	**Start date of Contract/Task Order**	**End date of Contract/Task Order**	**Total Value of Contract/Task Order (M)**	**Is this an Interagency Acquisition? (Y/N)**	**Is it performance based? (Y/N)**	**Competitively awarded? (Y/N)**	**What, if any, alternative financing option is being used? (ESPC, UESC, EUL, N/A)**	**Is EVM in the contract? (Y/N)**
DG133H07CN0002	Firm Fixed Price	Y	2006-05-05	2006-10-02	2010-06-30	$61.0	*	*	*	*	*

2. If earned value is not required or will not be a contract requirement for any of the contracts or task orders above, explain why:
*

3. Is there an acquisition plan which reflects the requirements of FAR Subpart 7.1 and has been approved in accordance with agency requirements? *
   a.**If "yes," what is the date?** *

Section D: Performance Information (All Capital Assets)

				Table 1: Performance Information Table			
Fiscal Year	Strategic Goal(s) Supported	Measurement Area	Measurement Grouping	Measurement Indicator	Baseline	Target	Actual Results
2009	3.2 Advance understanding of climate variability and change.	*	*	Decadal predictive skill in North America surface temperature	Quantification of climate model validation is insufficient	Refine measures of predictive skill to monitor the reduction of uncertainty in climate models	New metrics, that reflect the increased complexity of new coupled models, have been utilized to validate the climate and Earth System models that will be used in the next IPCC report.
2007	3.2 Advance understanding of climate variability and change.	*	*	Implement at least one new or updated component into the Earth System Model	Uncertainty in climate model projections remains higher than desirable	Decrease uncertainty in climate system processes and long-term climate projections measured through improvements in Earth System models	Completely new atmospheric physics and land models complement increased resolution in all Earth System Model components in the model being developed for the IPCC Fifth Assessment Report.
2009	3.2 Advance understanding of climate variability and change.	*	*	Implement at least one new or updated component into the Earth System Model	Uncertainty in climate model projections remains higher than desirable	Decrease uncertainty in climate system processes and long-term climate projections measured through improvements in Earth System models	The development of two Earth System Models, using two different ocean models, a new coupled physical climate model that includes interactive chemistry and aerosols, and new high-resolution coupled models is complete.
2007	3.2 Advance understanding of climate variability and change.	*	*	Decadal predictive skill in North America surface temperature	Quantification of climate model validation is insufficient	Measure predictive skill to validate the reduction of uncertainty in climate models	Techniques for assimilating ocean observations into a coupled model to develop initial conditions for decadal prediction can replicate significant features of the ocean s circulation

EXHIBIT 300   **CAPITAL ASSET PLAN AND BUSINESS CASE SUMMARY**

Table 1: Performance Information Table							
Fiscal Year	Strategic Goal(s) Supported	Measurement Area	Measurement Grouping	Measurement Indicator	Baseline	Target	Actual Results
2009	3.2 Advance understanding of climate variability and change.	*	*	Perform enhanced climate scenarios designed to address specific decision issues regarding climate change	Perform climate model scenarios with current physics-only climate models, as resources permit.	Simulate 4000 equivalent model years towards abrupt climate change	GFDL s IPCC AR4 model, CM2.1, and new high-resolution versions of this model, have been used to run centuries of control experiments, which will be examined for their proclivity for rapid climate events.
2007	3.2 Advance understanding of climate variability and change.	*	*	Perform enhanced climate scenarios designed to address specific decision issues regarding climate change	Perform climate model scenarios with current physics-only climate models, as resources permit.	Simulate 7800 equivalent model years to clarify natural systems uptake of carbon and to provide climate information for assessment report	Over 8000 equivalent model years of climate and Earth System model integrations have been completed
2005	3.2 Advance understanding of climate variability and change.	*	*	Number of terabytes of climate model data, with analysis tools, available via the web	2 terabytes of data available; minimal tools	5 terabytes of climate model data, and analysis tools, available via the web	6.8 terabytes of climate data available; display and download available via Live Access Server; analysis and graphical display provided by Grid Analysis and Display System
2005	3.2 Advance understanding of climate variability and change.	*	*	Contract benchmark suites at GFDL	64,000 cumulative contract benchmark suites delivered to date	Total contract benchmark suites delivered = 155,000	All contracted suites delivered
2005	3.2 Advance understanding of climate variability and change.	*	*	Aggregate performance increase for FSL HPCS	Extant FSL HPCS Linpack Benchmark performance	Goal of 1.8-2.0X aggregate performance increase	1.85X performance increase
2006	3.2 Advance understanding of climate variability and change.	*	*	Determination of optimal WRF modeling core to support the new Rapid Refresh Function during simultaneous execution of WRF and WRF-RUC (Rapid Update Cycle)	Simultaneous execution of a single WRF core and a single WRF-RUC	Simultaneous execution of two WRF cores and one WRF-RUC	Simultaneous execution of two WRF-RUC cores and one WRF core; statistics have been compiled to facilitate a decision on which WRF-RUC core will become the standard.
2005	3.2 Advance understanding of climate	*	*	Resolution of WRF (Weather Research and	CONUS scale weather forecast model	CONUS scale weather forecast model	CONUS scale weather forecast model

EXHIBIT 300　　　　　　　　**CAPITAL ASSET PLAN AND BUSINESS CASE SUMMARY**

				Table 1: Performance Information Table			
Fiscal Year	Strategic Goal(s) Supported	Measurement Area	Measurement Grouping	Measurement Indicator	Baseline	Target	Actual Results
	variability and change.			Forecasting) model CONUS scale weather forecast mode	at 13kms	at 10kms	running at 5 km
2005	3.2 Advance understanding of climate variability and change.	*	*	Implementation of a high resolution version of CM2 coupled climate model	Climate models lack resolution to distinguish regional effects of climate change. Baseline is 2 degrees	Develop high resolution (1 degree) global coupled climate model to examine regional climate change	High-resolution climate model implemented and undergoing performance evaluation
2009	3.2 Advance understanding of climate variability and change.	*	*	% of system availability	97%	At the discretion of the Government the vendor will either deliver additional equipment to make up for any loss of availability below 97% or the Government will reduce its monthly lease payments by the % of time the system was unavailable.	97.39%
2005	3.2 Advance understanding of climate variability and change.	*	*	Additional enhanced climate scenarios performed	1800 equivalent model years simulated to date	Simulate 3000 equivalent model years to clarify natural systems uptake of carbon and to provide climate information for assessment report	Over 3000 equivalent model years simulated
2006	2.3 Advance the development of global e-commerce and enhanced telecommunications and information services.	*	*	Availability of the operational RUC secondary backup	Support NCEP as secondary backup for the operational RUC in high-availability mode at 99% availability	Support NCEP as secondary backup for the operational RUC with best effort, targeting minimum 95% availability, due to lack of funding	Maintained the operational RUC secondary backup at 98.9% availability.
2006	3.2 Advance understanding of climate variability and change.	*	*	% availability of legacy HPCS at FSL	100% availability of legacy system for 6 months prior to delivery of replacement system (with funding)	Graceful degradation of legacy system though component cannibalization, maintaining minimum of 80% availability for entire year, due to lack of funding	Maintained 97% availability for iJet and 97.7% availability for eJet.
2006	3.2 Advance understanding of climate	*	*	Length of storage time before new data	Retain all data saved to the HSMS	Implement a data storage policy to age off	Implemented 2.5 years data storage policy

EXHIBIT 300   **CAPITAL ASSET PLAN AND BUSINESS CASE SUMMARY**

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Fiscal Year	Strategic Goal(s) Supported	Measurement Area	Measurement Grouping	Measurement Indicator	Baseline	Target	Actual Results
	variability and change.			storage media must be purchased		data after 2.5 years in order to contain data storage costs due to lack of funding	and reduced storage costs through reuse of tapes by more than $7,000 annually at current usage rate.
2007	3.2 Advance understanding of climate variability and change.	*	*	Response time	Escalation Levels : Level 0 = 1 business hour; Level 1 = 3 business hours; Level 2-3 = priority/issue dependant	These response times are specified in the HPC R&D contract. During first year of the contract the timeliness and effectiveness of escalation process will be monitored and adjustments made as necessary.	The contractor was successful in meeting these response times a majority of the time. The project team tracks help desk tickets on a weekly basis to ensure that the contractor is performing.
2007	3.2 Advance understanding of climate variability and change.	*	*	Implementation of Integrated Management	Initial Integrated Management processes in place	Refined and more complete processes to be defined and implemented during FY07.	Resource allocation process successfully implemented. Process for collecting quarterly metrics implemented.
2007	3.2 Advance understanding of climate variability and change.	*	*	Concurrent execution of atmospheric models on the NOAA R&D HPCS	Atmospheric models run on the NOAA operational HPCS	Atmospheric models (NMM, WRF-EM, GFS) to run concurrently on the NOAA R&D HPCS	All running on the NOAA Boulder HPCS supporting research projects.
2007	3.2 Advance understanding of climate variability and change.	*	*	Benchmark suites	63,073 benchmark suites	146,066 accumulated benchmark suites	167,052 delivered.
2007	3.2 Advance understanding of climate variability and change.	*	*	Performance Increase (X)	2.93X level of performance over current baseline offered at initial delivery	Successful acceptance of replacement system for NCEP that meets contracted availability and enhanced benchmark performance requirements	3.13X level of performance was delivered.
2007	3.2 Advance understanding of climate variability and change.	*	*	% of data availability	99%	At the discretion of the Government the Vendor will either deliver additional equipment to make up for any	99%

EXHIBIT 300   **CAPITAL ASSET PLAN AND BUSINESS CASE SUMMARY**

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Fiscal Year	Strategic Goal(s) Supported	Measurement Area	Measurement Grouping	Measurement Indicator	Baseline	Target	Actual Results
						loss of availability below 99% or the Government will reduce its monthly lease payment by the % of time that the data was unavailable.	
2009	3.2 Advance understanding of climate variability and change.	*	*	Provide focused assessment reports based on climate scenarios	Contribute research findings to National and International climate assessments	Publish assessment report on a key climate impacts topic, incorporating climate scenario results	CCSP SAP 3.4, Abrupt Climate Change (GFDL Lead Author)
2007	3.2 Advance understanding of climate variability and change.	*	*	Performance increase (X)	3.1X level of performance over current baseline offered at initial delivery	Successful acceptance of replacement system for ESRL that meets availability and enhanced Benchmark Performance requirements	3.28X level of performance delivered
2007	3.2 Advance understanding of climate variability and change.	*	*	Improved 3 Day Precipitation Forecasts (%Accuracy, model capability)	17% (forecast precipitation accuracy)	19% (forecast precipitation accuracy)	19%
2009	3.2 Advance understanding of climate variability and change.	*	*	% of data availability	99%	At the discretion of the Government the vendor will either deliver additional equipment to make up for any loss of availability below 99% or the Government will reduce its monthly lease payments by the % of time the data was unavailable.	98.43%
2007	3.2 Advance understanding of climate variability and change.	*	*	Terabytes (TB) of storage	127 TB	Upgrade in FY07 to 830 TB of disk space	847 TB was delivered.
2007	3.2 Advance understanding of climate variability and change.	*	*	Performance increase (X)	1.76X level of performance over current baseline offered at initial delivery	Successful acceptance of replacement systems for GFDL that meets	1.98x level of peformance was delivered

EXHIBIT 300   CAPITAL ASSET PLAN AND BUSINESS CASE SUMMARY

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Fiscal Year	Strategic Goal(s) Supported	Measurement Area	Measurement Grouping	Measurement Indicator	Baseline	Target	Actual Results
						contracted availability and enhanced Benchmark Performance requirements	
2008	3.2 Advance understanding of climate variability and change.	*	*	Performance Increase over Base (X)	4.2X level of performance over initial baseline	Successful acceptance of mid-life upgrade for HPCS sub-system located in Boulder that meets availability and enhanced benchmark performance requirements	Mid-life upgrades completed at Boulder
2009	3.2 Advance understanding of climate variability and change.	*	*	Weather and climate applications benchmark performance	Performance on existing GFDL and NCEP R&D systems	Complete negotiation for benchmark performance during contract Option Period	Excercised 9 month option to extend the contract in FY10. Plan is to terminate this contract at the end of FY10.
2008	3.2 Advance understanding of climate variability and change.	*	*	Terabytes (TB) of storage	847 TB	1,497 TB of disk space	Target achieved
2009	3.2 Advance understanding of climate variability and change.	*	*	Flow-Following Finite Volume Icosahedral Model (FIM) capable of ingesting live data and producing realistic forecasts	FIM is in initial development	FIM running at 10KM resolution	FIM global model was successfully developed and did run at 10km resolution as part of HFIP during Aug/Sept. Gave improved hurricane intensity forecasts.
2009	3.2 Advance understanding of climate variability and change.	*	*	Hurricane Track Error	Reduce by 20% in 10 years	Reduce by 25% in 10 Years	Implementation of Global Forecast system improves track by 10% in 2008 case study tests
2009	3.2 Advance understanding of climate variability and change.	*	*	Contract benchmark suites	228,282 benchmark suites in FY08	321,659 benchmark suites in FY09	358,679
2008	3.2 Advance understanding of climate variability and change.	*	*	Provide focused assessment reports based on climate scenarios	Contribute research findings to National and International climate assessments	Publish assessment report on a key climate impacts topic, incorporating climate scenario	CCSP SAP 3.2 was published, with a NOAA lead.

EXHIBIT 300   **CAPITAL ASSET PLAN AND BUSINESS CASE SUMMARY**

Table 1: Performance Information Table							
Fiscal Year	Strategic Goal(s) Supported	Measurement Area	Measurement Grouping	Measurement Indicator	Baseline	Target	Actual Results
						results	
2008	3.2 Advance understanding of climate variability and change.	*	*	Help desk response time	Escalation Levels : Level 0 = 1 business hour; Level 1 = 3 business hours; Level 2-3 = priority/issue dependant	Reduced initial response time and improved time-to-completion.	Help desk tickets tracked througout the year to ensure that service levels to customers were being met.
2008	3.2 Advance understanding of climate variability and change.	*	*	Implement at least one new or updated component into the Earth System Model	Uncertainty in climate model projections remains higher than desirable	Decrease uncertainty in climate system processes and long-term climate projections measured through improvements in Earth System models	A new component model of ocean biogeochemistry is running in the Earth System model to be used in the IPCC AR5.
2008	3.2 Advance understanding of climate variability and change.	*	*	Leverage high performance computing in other federal agencies to accelerate meeting mission goals	NOAA climate models run alsmost exclusively on NOAA HPC platforms	Complete validation experiments with ultra-high resoliution atmospheric models and control runs of a high-resolution coupled climate model on DOE HPC platforms	NOAA has used DOE computing at ORNL, NERSC, and ALCF to prototype new climate models and their components. Production use is scheduled for 2009.
2007	3.2 Advance understanding of climate variability and change.	*	*	Leverage high performance computing in other federal agencies to accelerate meeting mission goals	NOAA climate models run alsmost exclusively on NOAA HPC platforms	Port new atmoshperic and high resolution coupled climate models to DOE HPC platforms	This port is complete, and a number of validation experiments and control integrations are underway
2007	3.2 Advance understanding of climate variability and change.	*	*	Provide focused assessment reports based on climate scenarios	Contribute research findings to National and International climate assessments	Publish assessment report on a key climate impacts topic, incorporating climate scenario results	A draft of CCSP SAP 3.2 is complete and is currently under NRC review.
2008	3.2 Advance understanding of climate variability and change.	*	*	Decadal predictive skill in North America surface temperature	Quantification of climate model validation is insufficient	Measure predictive skill to monitor the reduction of uncertainty in climate models	High-resolution global model runs for the North American Climate Change Assessment Program (NARCCAP) are complete and are being in analyzed as part of the NARCCAP science program

Table 1: Performance Information Table							
Fiscal Year	Strategic Goal(s) Supported	Measurement Area	Measurement Grouping	Measurement Indicator	Baseline	Target	Actual Results
2008	3.2 Advance understanding of climate variability and change.	*	*	Perform enhanced climate scenarios designed to address specific decision issues regarding climate change	Perform climate model scenarios with current physics-only climate models, as resources permit.	Simulate 4000 equivalent model years towards climate change attribution	Development of Earth System models that close the carbon cycle and include ocean biogeochemistry and land ecology is complete and control runs have commenced.
2008	3.2 Advance understanding of climate variability and change.	*	*	Explicit thunderstorm prediction experiments	Not done currently	Experimental tests with a WRF-based high-resolution (3-5 km) prediction system	Performing experimental tests with a WRF-based 3KM prediction system. (High Resolution Rapid Refresh)
2008	3.2 Advance understanding of climate variability and change.	*	*	Joint Center for Satellite Data Assimilation	Not done currently	Develop assimilation of satellite data from advanced sounders in the NPOESS Preparatory Program and the operational European METOP suite	METOP IASI will be implemented at NCEP on 24 February. Work is proceeding on NPP instruments.
2008	3.2 Advance understanding of climate variability and change.	*	*	NCEP/EMC National Integrated Drought Information System	Not done currently	Develop and test land surface and hydrological prediction systems to support the National Integrated Drought Information System.	NIDIS information is sent regularly to the NIDIS Web site; includes soil moisture anomalies and percentiles of soil moisture, snow water, etc, based on a 30-year climatology of the four land-surface schemes run by NCEP (Noah, VIC, Mosaic, SAC)
2008	3.2 Advance understanding of climate variability and change.	*	*	NCEP/EMC Modeling Test Bed	Not done currently	Construct and test advanced data assimilation techniques for global model initial conditions	Advances have been made in the NCEP GSI system and will be implemented 24 February; 4d-var code has been delivered and is being tested
2008	3.2 Advance understanding of climate variability and	*	*	Contract benchmark suites	146,066 benchmark suites in FY07	228,282 benchmark suites in FY08	964,163 delivered

EXHIBIT 300   **CAPITAL ASSET PLAN AND BUSINESS CASE SUMMARY**

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Fiscal Year	Strategic Goal(s) Supported	Measurement Area	Measurement Grouping	Measurement Indicator	Baseline	Target	Actual Results
	change.						
2008	3.2 Advance understanding of climate variability and change.	*	*	Performance Increase over Base (X)	7.54 X level of performance over initial baseline	Successful acceptance of mid-life upgrade for HPCS sub-system located in Gaithersburg that meets availability and enhanced benchmark performance requirements	Mid-life upgrade completed at Gaithersburg.
2009	3.2 Advance understanding of climate variability and change.	*	*	Hurricane Intensity Error	Reduce by 8% in 10 Years	Reduce by 12% in 10 Years	Preliminary results of coupling HWRF with HYCOM improves intensity predictions on 2008 cases
2007	2.1 Develop tools and capabilities that improve the productivity, quality, dissemination, and efficiency of research.	*	*	Improved 1 day precipitation forecasts (% accuracy model capability)	30% (forecast precipitation accuracy)	32% (forecast accuracy)	31%
2007	2.1 Develop tools and capabilities that improve the productivity, quality, dissemination, and efficiency of research.	*	*	% of system available	97%	Vendor will deliver additional equipment to make up for any loss of availability below 97% or the Government will reduce its monthly lease payment by the % of time that the system was unavailable.	94% was achieved due to the late delivery of the system in Boulder and the numerical reproducibility problems encountered with the Princeton system.
2008	2.1 Develop tools and capabilities that improve the productivity, quality, dissemination, and efficiency of research.	*	*	% of data availability	99%	At the discretion of the Government the vendor will either deliver additional equipment to make up for any loss of availability below 99% or the Government will reduce its monthly lease payments by the % of time the data was unavailable.	96.2% delivered. The underperformance was due to problems encountered with the Princeton HSMS
2008	2.1 Develop	*	*	% of system	97%	At the discretion	95.29 %

EXHIBIT 300   **CAPITAL ASSET PLAN AND BUSINESS CASE SUMMARY**

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	tools and capabilities that improve the productivity, quality, dissemination, and efficiency of research.			availability		of the Government the vendor will either deliver additional equipment to make up for any loss of availability below 97% or the Government will reduce its monthly lease payments by the % of time the system was unavailable.	delivered. The delta was due to problems with the Princeton system
2007	2.1 Develop tools and capabilities that improve the productivity, quality, dissemination, and efficiency of research.	*	*	Reduced Atlantic Hurricane Forecast 48 Hour Track Errors (model capability)	142 Nautical Miles	128 Nautical Miles	No results reported
2008	2.1 Develop tools and capabilities that improve the productivity, quality, dissemination, and efficiency of research.	*	*	Performance Increase over Base (X)	2.79 X level of performance over initial baseline	Successful acceptance of mid-life upgrade for HPCS sub-system located in Princeton that meets availability and enhanced benchmark performance requirements	MId-life upgrade completed at princeton. System performance was lower then expected.
2009	2.1 Develop tools and capabilities that improve the productivity, quality, dissemination, and efficiency of research.	*	*	Help desk response time	Escalation Levels: Level 0 = 1 business hour; Level 1 = 3 business hours: Levels 2-3 = priority/issue dependant	Reduced initial response time and improve time-to-completi on	Help desk tickets tracked througout the year to ensure that service levels to customers were being met.
2009	2.1 Develop tools and capabilities that improve the productivity, quality, dissemination, and efficiency of research.	*	*	Expansion of Rapid Update Cycle (RUC) model domain	Current RUC domain includes the continental United States only	RUC domain to include Alaska and Hawaii	Rapid Refresh (RUC replacement covering Alaska, all North America but not Hawaii) now in final testing at ESRL in anticipation of NCEP implementation in 2010.
2007	2.1 Develop tools and capabilities that improve the productivity,	*	*	20 km resolution RUC Hybcst code performance	Existing performance	2x increase	1.8x performance increase.

Fiscal Year	Strategic Goal(s) Supported	Measurement Area	Measurement Grouping	Measurement Indicator	Baseline	Target	Actual Results
Table 1: Performance Information Table						
	quality, dissemination, and efficiency of research.						
2008	2.1 Develop tools and capabilities that improve the productivity, quality, dissemination, and efficiency of research.	*	*	NCEP/EMC Climate Test Bed	NCEP/EMC Climate Test Bed	Develop and test the concept of multi-model ensembles for Seasonal to Interannual prediction.	Negotiations with European consortium have stalled as have discussions with GFDL; project is on hold
2011	3.2 Advance understanding of climate variability and change.	*	*	ORNL System Availability	96%	96%	
2012	3.2 Advance understanding of climate variability and change.	*	*	Network Availability	99.9%	99.9%	
2011	3.2 Advance understanding of climate variability and change.	*	*	Cumulative number of new decadal prototype forecasts and predictions made with high-resolution coupled climate model	0	1	
2012	3.2 Advance understanding of climate variability and change.	*	*	Cumulative number of new decadal prototype forecasts and predictions made with high-resolution coupled climate model	1	1	
2010	3.2 Advance understanding of climate variability and change.	*	*	o ORNL Peak Computational Performance	0	260	
2011	3.2 Advance understanding of climate variability and change.	*	*	Percentage uncertainty in possible 21st century sea level rise (0-1m = 100% uncertainty)	74%	74%	
2014	3.2 Advance understanding of climate variability and change.	*	*	Percentage uncertainty in possible 21st century sea level rise (0-1m = 100% uncertainty)	55%	50%	
2012	3.2 Advance	*	*	ORNL Data	98%	98%	

EXHIBIT 300 **CAPITAL ASSET PLAN AND BUSINESS CASE SUMMARY**

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				Table 1: Performance Information Table			
	understanding of climate variability and change.			Availability			
2010	3.2 Advance understanding of climate variability and change.	*	*	ORNL Data Availibility	0%	98%	
2011	3.2 Advance understanding of climate variability and change.	*	*	Quanity of data moved over network	0	TBD	
2011	3.2 Advance understanding of climate variability and change.	*	*	ORNL Peak Computational Performance	260	980	
2014	3.2 Advance understanding of climate variability and change.	*	*	Cumulative number of new decadal prototype forecasts and predictions made with high-resolution coupled climate model	2	3	
2012	3.2 Advance understanding of climate variability and change.	*	*	ORNL Peak Computational Performance	980	1,106	
2012	3.2 Advance understanding of climate variability and change.	*	*	Quanity of data moved over network	TBD	TBD	
2011	3.2 Advance understanding of climate variability and change.	*	*	Network Availability	0%	99.9%	
2011	3.2 Advance understanding of climate variability and change.	*	*	Number of regional scale projections for assessments & decision support.	2	3	
2013	3.2 Advance understanding of climate variability and change.	*	*	Cumulative number of new decadal prototype forecasts and predictions made with high-resolution coupled climate model	1	2	
2012	3.2 Advance understanding of climate	*	*	Percentage uncertainty in possible 21st	74%	65%	

EXHIBIT 300   **CAPITAL ASSET PLAN AND BUSINESS CASE SUMMARY**

			Table 1: Performance Information Table				
Fiscal Year	**Strategic Goal(s) Supported**	**Measurement Area**	**Measurement Grouping**	**Measurement Indicator**	**Baseline**	**Target**	**Actual Results**
	variability and change.			century sea level rise (0-1m = 100% uncertainty)			
2012	3.2 Advance understanding of climate variability and change.	*	*	Number of regional scale projections for assessments & decision support.	3	5	
2011	3.2 Advance understanding of climate variability and change.	*	*	ORNL Data Availibility	98%	98%	
2013	3.2 Advance understanding of climate variability and change.	*	*	Percentage uncertainty in possible 21st century sea level rise (0-1m = 100% uncertainty)	65%	55%	
2014	3.2 Advance understanding of climate variability and change.	*	*	Number of regional scale projections for assessments & decision support.	7	8	
2012	3.2 Advance understanding of climate variability and change.	*	*	ORNL System Availability	96%	96%	
2010	3.2 Advance understanding of climate variability and change.	*	*	ORNL System Availibility	0%	96%	
2014	3.2 Advance understanding of climate variability and change.	*	*	Cumulative number of new functionalities incorporated into Earth System Model to improve realism of climate simulation	2	3	
2012	3.2 Advance understanding of climate variability and change.	*	*	Improved treatment of key physical processes in climate models aimed at improving: model performance, understanding of uncertainties, and confidence in climate change projections and predictions.	0	3	

EXHIBIT 300

CAPITAL ASSET PLAN AND BUSINESS CASE SUMMARY

	Table 1: Performance Information Table						
Fiscal Year	**Strategic Goal(s) Supported**	**Measurement Area**	**Measurement Grouping**	**Measurement Indicator**	**Baseline**	**Target**	**Actual Results**
2013	3.2 Advance understanding of climate variability and change.	*	*	Cumulative number of assessments of carbon, trace gas and aerosol budgets and feedbacks	0	1	
2013	3.2 Advance understanding of climate variability and change.	*	*	Improved treatment of key physical processes in climate models aimed at improving: model performance, understanding of uncertainties, and confidence in climate change projections and predictions.	3	3	
2012	3.2 Advance understanding of climate variability and change.	*	*	WV System Availabilty	0%	96%	
2013	3.2 Advance understanding of climate variability and change.	*	*	WV System Availability	96%	96%	
2012	3.2 Advance understanding of climate variability and change.	*	*	Cumulative number of new functionalities incorporated into Earth System Model to improve realism of climate simulation	1	1	
2012	3.2 Advance understanding of climate variability and change.	*	*	WV site data availability	0%	99%	
2014	3.2 Advance understanding of climate variability and change.	*	*	Improved treatment of key physical processes in climate models aimed at improving: model performance, understanding of uncertainties, and confidence in climate change projections and predictions.	3	3	

Table 1: Performance Information Table							
Fiscal Year	Strategic Goal(s) Supported	Measurement Area	Measurement Grouping	Measurement Indicator	Baseline	Target	Actual Results
2010	3.2 Advance understanding of climate variability and change.	*	*	Perform climate model scenarios with physical climate and Earth System models, as resources permit.	Perform enhanced climate scenarios designed to address specific decision issues regarding climate change	Simulate 5000 equivalent model years towards the 5th Climate Model Intercomparison Project (CMIP5), in preparation for the IPCC AR5 on NOAA and DOE HPC systems.	
2011	3.2 Advance understanding of climate variability and change.	*	*	Cumulative number of new functionalities incorporated into Earth System Model to improve realism of climate simulation	1	1	
2014	3.2 Advance understanding of climate variability and change.	*	*	WV System Availability	96%	96%	
2014	3.2 Advance understanding of climate variability and change.	*	*	WV site data availability	99%	99%	
2010	3.2 Advance understanding of climate variability and change.	*	*	Uncertainty in climate model projections remains higher than desirable	Implement at least one new or updated component into the Earth System Model	Decrease uncertainty in climate system processes and long-term climate projections measured through improvements in Earth System models	
2010	3.3 Provide accurate and timely weather and water information.	*	*	Reduce by 8% in 10 years	Hurricane Intensity Error	Reduce by 12% in 10 years	
2010	3.2 Advance understanding of climate variability and change.	*	*	Contribute research findings to peer-reviewed literature	Provide focused report based on climate scenarios	Complete a study of the performance of the simulated ozone holes in coupled chemistry climate models worldwide	
2010	3.2 Advance understanding of climate variability and change.	*	*	Number of sites connected	3	4	

EXHIBIT 300   **CAPITAL ASSET PLAN AND BUSINESS CASE SUMMARY**

Table 1: Performance Information Table							
Fiscal Year	Strategic Goal(s) Supported	Measurement Area	Measurement Grouping	Measurement Indicator	Baseline	Target	Actual Results
2010	3.2 Advance understanding of climate variability and change.	*	*	% System Availablity at Princeton	95%	95%	
2013	3.2 Advance understanding of climate variability and change.	*	*	Cumulative number of new functionalities incorporated into Earth System Model to improve realism of climate simulation	1	2	
2011	3.2 Advance understanding of climate variability and change.	*	*	Number of POAMS identifed for ORNL system	TBD	0	
2010	3.3 Provide accurate and timely weather and water information.	*	*	Reduce by 20% in 10 years	Hurricane Track Error	Reduce by 25% in 10 Years	
2012	3.2 Advance understanding of climate variability and change.	*	*	Number of POAMS identified for WV system	TBD	0	
2012	3.2 Advance understanding of climate variability and change.	*	*	Provide users with access to computational resources at WV site	0	TBD	
2010	3.2 Advance understanding of climate variability and change.	*	*	% Data Availability Princeton	95%	95%	
2013	3.2 Advance understanding of climate variability and change.	*	*	Number of regional scale projections for assessments & decision support.	5	7	
2010	3.3 Provide accurate and timely weather and water information.	*	*	% Data Availability at Boulder and Gaithersburg	99%	99%	
2012	3.2 Advance understanding of climate variability and change.	*	*	WV site Peak Computational performance	0	325	
2011	3.2 Advance understanding of climate variability and change.	*	*	Number of sites connected	4	5	
2013	3.2 Advance	*	*	WV site data	99%	99%	

EXHIBIT 300   **CAPITAL ASSET PLAN AND BUSINESS CASE SUMMARY**

Table 1: Performance Information Table							
Fiscal Year	Strategic Goal(s) Supported	Measurement Area	Measurement Grouping	Measurement Indicator	Baseline	Target	Actual Results
	understanding of climate variability and change.			availability			
2010	3.3 Provide accurate and timely weather and water information.	*	*	% System Availability at Boulder and Gaithersburg	97%	97%	
2011	3.2 Advance understanding of climate variability and change.	*	*	Provide users with access to computational resources at ORNL	0	TBD	

EXHIBIT 300   **CAPITAL ASSET PLAN AND BUSINESS CASE SUMMARY**

Part II: Planning, Acquisition And Performance Information

Section A: Cost and Schedule Performance (All Capital Assets)

1. Comparison of Actual Work Completed and Actual Costs to Current Approved Baseline

Description of Milestones	Planned Cost ($M)	Actual Cost ($M)	Planned Start Date	Actual Start Date	Planned Completion Date	Actual Completion Date	Planned Percent Complete	Actual Percent Complete
NCEP use of HPC R&D	*	*	2011-10-01		2012-09-30		0.00%	0.00%
Base Funding	$23.7	$18.8	2009-10-01	2009-10-01	2010-09-30		79.00%	79.00%
Base Funding	*	*	2018-10-01		2019-09-30		0.00%	0.00%
Base Funding	*	*	2016-10-01		2017-09-30		0.00%	0.00%
Base Funding	$26.7	$26.7	2008-10-01	2008-10-01	2009-09-30	2009-09-30	100.00%	100.00%
Base Funding	*	*	2010-10-01		2011-09-30		0.00%	0.00%
NCEP use of HPC R&D	*	*	2012-10-01		2013-09-30		0.00%	0.00%
Base funding	*	*	2012-10-31		2013-09-30		0.00%	0.00%
NCEP use of HPC R&D	*	*	2013-10-01		2014-09-30		0.00%	0.00%
NCEP use of HPC R&D	$5.8	$5.0	2009-10-01	2009-10-01	2010-09-30		86.00%	86.00%
FY07 Installation and acceptance of R&D HPCS	$26.4	$26.4	2006-10-01	2006-10-01	2007-09-30	2007-09-30	100.00%	100.00%
NCEP use of HPC R&D	*	*	2014-10-01		2015-09-30		0.00%	0.00%
NCEP use of HPC R&D	*	*	2017-10-01		2018-09-30		0.00%	0.00%
FY09 NCEP use of HPC R&D	$5.8	$5.8	2008-10-01	2008-10-01	2009-09-30	2009-09-30	100.00%	100.00%
Base funding	*	*	2011-10-01		2012-09-30		0.00%	0.00%
FY08 Annual Operations review	$25.6	$25.6	2007-10-01	2007-10-01	2008-09-30	2008-09-30	100.00%	100.00%
Base funding	*	*	2013-10-01		2014-09-30		0.00%	0.00%
Base Funding	*	*	2015-10-01		2016-09-30		0.00%	0.00%
ARRA Funding	$79.2	$43.2	2009-10-01	2009-10-01	2010-09-30		56.00%	54.00%
FY06 Annual Operations review for Workstreams 7-9	$0.5	$0.5	2005-10-01	2005-10-01	2006-09-30	2006-09-30	100.00%	100.00%
FY06 Annual Operations review for Workstreams 1-6 (covered by current GFDL and NCEP Exhibit 300s)	$0.0	$0.0	2005-10-01	2005-10-01	2006-09-30	2006-09-30	100.00%	100.00%
Base Funding	*	*	2014-10-01		2015-09-30		0.00%	0.00%

EXHIBIT 300   **CAPITAL ASSET PLAN AND BUSINESS CASE SUMMARY**

1. Comparison of Actual Work Completed and Actual Costs to Current Approved Baseline								
Description of Milestones	Planned Cost ($M)	Actual Cost ($M)	Planned Start Date	Actual Start Date	Planned Completion Date	Actual Completion Date	Planned Percent Complete	Actual Percent Complete
NCEP use of HPC R&D	*	*	2016-10-01		2017-09-30		0.00%	0.00%
Base Funding	*	*	2017-10-01		2018-09-30		0.00%	0.00%
NCEP use of HPC R&D	*	*	2010-10-01		2011-09-30		0.00%	0.00%
NCEP use of HPC R&D	*	*	2018-10-01		2019-09-30		0.00%	0.00%
NCEP use of HPC R&D	*	*	2015-10-01		2016-09-30		0.00%	0.00%
ARRA Funding	$85.8	$75.2	2009-04-22	2009-06-01	2009-09-30	2009-09-30	100.00%	88.00%

* - Indicates data is redacted.